Nutrition News

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ANIMAL EXPERIMENTATION APPLIED TO HUMAN ENERGY PROBLEMS

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Much of our knowledge of human nutrition has been secured from studies with animals. Although there are a few notable exceptions, generally consistent results have been obtained from experimental observations among mammalian species. Therefore, it has been possible to transpose findings from many nutritional studies of other mammals to man, directly or after quantitative modification.

Basal metabolism and conditions modifying it have been studied most satisfactorily with human beings because of the need for cooperation between operator and subject. However, results of studies with human subjects on the utilization of energy from food have been generally inconclusive because periods used have been too short.

The periods of observation required to determine how much of the energy contained in a food is lost during its metabolism (specific dynamic action or S.D.A. of foods) are generally too severe for most subjects. Such work requires abstinence from food and complete muscular quiescence for 12 hours or more, depending upon the diet used.

The result is that energy wastage (S.D.A.) in utilization of the usual human diets is taken roughly under all conditions as equal to 6 or 10 per cent of their fuel value, a value generally computed by the Atwater factors. Such estimated fuel values of human diets are of great value in practical application of nutritional principles. However, in experimental research, they introduce an element of uncertainty that should be avoided in human studies as it is in the more precise animal experimentation.

The time required for satisfactory measurements of the S.D.A. of food in lower animals is not a factor limiting the accuracy of these values. The attainment and maintenance of muscular quiescence is more difficult, but training the animal, or restricting its quarters, with corrections applied to the results for movements that cannot be avoided, generally suffice to give satisfactory information. Such procedures have shown that the S.D.A. of food is dependent upon the plane of nutrition, the nutritive balance of the ration (with some exceptions) and the purposes for which the food is being used: growth, maintenance, fattening, milk production, etc. Maintenance and milk production are associated with smaller percentage wastages of food energy than is fattening.

When measuring the energy cost of milk production, (i.e., the metabolizable energy required from food above that required for maintenance) a complete energy balance is required. Lacking such information for women, the Committee on Calorie Requirements of the FAO assumed utilization to be 60 per cent. This means that production of an average daily yield of 600 calories of milk would require an extra intake of 1000 calories from food. However, this figure is little better than a guess.

The disposal of energy on excessive energy intakes has been studied more thoroughly with farm animals than with the human. The excess of energy consumed above current needs can be deposited as fat or dissipated as heat. Fat deposition in pigs bred over years for fat production, may during the absorptive period, be equal in energy value to 2 or 3 times the pig's concurrent basal energy expenditure. But the process is extremely wasteful because of the elevated heat production extending over many hours.

Many problems of obesity in man can be solved in quantitative fashion

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by the energy balance technic used with farm animals. Adaptation of these technics to the human is difficult, but it may be feasible to attain satisfactory results by intermittent observations over periods of tolerable length. Accumulated values could then be mathematically treated for quantitative interpretation.

The common belief that obesity is a contributing cause of many diseases of the cardiovascular system, kidneys, etc., is not compelling in so far as evidence adduced consists of comparisons of disease incidence of obese and non-obese persons. Such correlations are susceptible of other interpretations. Until a causal relation is experimentally established there is no assurance that weight reduction will be followed by remission of the disease. Here again is an important problem in energy metabolism that could profitably be studied with such animals as improved breeds of swine in which extreme overweight, as related to any physiologically ideal or desirable weight, is a common economic practice on the farm.

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Glances AT NUTRITION RESEARCH

All food eaten, its nutritive value, sanitary quality, and atmosphere in which served influence a child's well-being. Thus, current food habit surveys include between-meal eating, sanitation, environment, and nutritive value of meals.

Between-Meal Feeding for Preschoolers—A child's feelings as well as hunger determine his appetite. A study of children aged three to five showed that the emotional state of the child at mealtime caused greater variation in his appetite for lunch than did amount, kind, or serving time of between-meal snacks. Even the children who ate the smallest lunches rarely varied more than two spoonsful from their normal lunch—if the snack eaten was served 1½ hours before lunch and did not consist of concentrated sweets. Children eating nutritious snacks of 200-300 calories ate the same amount of lunch as they did when no snack was served or when it was only fruit juice. (An 8 oz. glass of whole milk contains 168 calories.)

—J. Home Ec. 46:724 (Dec.) 1954.

Breakfast for Teen-age Boys—Milk was included in all breakfasts used to test the response of teen-age boys to varying combinations of foods. Increasing protein intake above 25 grams and calorie intake above 750 calories at breakfast had no significant effect on the physiologic response of boys 12 to 14 years of age as measured by maximum work rate and output, neuromuscular tremor, or choice reaction time.

—J. Am. Diet. Assn. 31:359 (April) 1955.

Food Habits of Children—Rural children in grades five through eight eat a better diet than do city children in the same grades, according to a recent survey. The average milk intake of rural children was 3.57 cups and of city children was 3.32 cups. Shortages were most marked in green and yellow vegetables and ascorbic acid-rich foods, but intake of these was least among city children. Both city and rural children averaged over 2 servings per day of protein rich foods. Only 10 per cent of the children studied reported missing meals and 97 per cent reported between-meal eating.

—J. Am. Diet. Assn. 31:794 (Aug.) 1955.

Survey of School Lunch Practices—A survey of 795 school lunchrooms reveals there is room for improvement in sanitation practices and a need to extend the use of the school lunchroom for health education of the children. Many of the schools studied needed more adequate refrigeration, better means of protecting foods from contamination, and more rigid health standards for the workers. School lunches could be more extensively used as a desirable educational experience for children, helping them to learn about nutrition, food sanitation, and social customs related to eating.

—Am. J. Pub. Health. 45:163 (Feb.) 1955.

Dr. Mitchell

Dr. Mitchell is Professor Emeritus in Animal Nutrition at the University of Illinois. He was a charter member of the American Institute of Nutrition and for eighteen years acted as a member of the editorial board of the Journal of Nutrition. He is a member of the American Society of Biological Chemists, American Dietetics Association, and American Association for the Advancement of Science.

His contributions to nutrition research have been recognized by the Borden Award from the American Institute of Nutrition and the Morrison Award from the American Society of Animal Production. He has published many scientific articles and is the joint author of three scientific books.

Advance in Teaching

Elementary school teachers in Indiana, Iowa, Kentucky, and Tennessee are required to have a course in nutrition for certification. In a number of other states, nutrition is an elective or included in required health education courses. These courses for teachers are a significant step toward better food practices for school children.

Institute of Nutrition

The American Institute of Nutrition was founded in 1928 to extend knowledge of nutrition and facilitate personal contacts between investigators in nutrition. The society of 422 members is composed of scientists who have made notable contributions in nutrition research. The Institute is a unit of the Federation of American Societies of Experimental Biology. Its official publication is the Journal of Nutrition.

NUTRITION EDUCATION IN TUBERCULOSIS HOSPITALS

By Ellen B. Guernsey, Senior Nutritionist, New York State Department of Health

Unique opportunities for nutrition education exist in many institutions where the patients or residents are hospitalized for more than a few days. Although the experiences described have been carried on in the tuberculosis hospitals of the New York State Department of Health, they are applicable elsewhere.

One effective scheme is the "Patients' Menu Committee." A committee of two young men and two young women patients selected by the Occupational Therapist, met with me to plan a week's hospital menu. Each of us had a blank menu-planner, so all could readily see how the menu developed. Opportunities for nutrition teaching continually arose. The committee became keenly interested in the "why" of certain foods. Complications such as equipment not available, personnel not on duty, and produce not delivered were new ideas to them in connection with the end result—meals served. The four were surprised, too, when they realized that even among themselves no one menu was completely acceptable.

The menu planning was tape-recorded the next day with discussion condensed to one hour and nutrition emphasis retained. Later it was broadcast over the hospital system. The menus were served the following week. Despite the normal "ribbing" that was forthcoming, there seemed to be unusually good acceptance of the meals by the majority of patients that week.

The project had many highlights. I was alerted to certain areas needing more supervision. The menus included foods and combinations which I would never have dared to use, but which my committee assured me were all right. As to time involved, it really did not take any longer than when I struggled alone with menus.

At one tuberculosis hospital, a Patients' Welcoming Committee orients new admissions to life in a sanatorium. To this committee, I explained briefly the food requirements for tuberculosis and some phases of institutional food service. This group was thus ready to talk constructively with the newcomers about food. Best of all, a three-way liaison was effected for the residents, the new patients, and me.

In response to a request from the Director in another sanatorium, for a device to highlight reasons for the foods served and the importance of eating at least a portion of each, the "Tray Cards" were evolved. Eleven small folded cards were placed on patients' trays, one every third day. The first card introduced in rhyme "Clues for You" on "good eating." Subsequent ones gave brief explanations of the clues: "A Variety of Foods," "Milk," "Meat, Poultry, Fish," "Eggs," "Citrus Fruits," "Butter, Cream," "Green and Yellow Fruits and Vegetables," "Fruits and Vegetables," "Breads and Cereals." The last card summarized, again in rhyme, benefits of a good diet plus extras in tuberculosis.

Pre-campaign strategies included a conference with some of the hospital staff, an article in the sanatorium news-bulletin, and circulation of a short "flyer" just prior to the first card.

Following the series, a follow-up card entitled, "It's Your Turn Now," asked the patients if they liked the cards, what they remembered best, if they would like more information about food, and what they did with the cards.

The hospital staff agreed, that the "clues" had definitely stimulated interest in nutrition and diet on the part of patients and staff. Many points brought out in the patients' comments are serving as the basis for a continuing program of nutrition education with patients in the individual buildings. Most significant, is the trend toward more effective unification of the team approach of all hospital services. After a few months' interval, the series will be repeated and it is planned to extend the project to other state tuberculosis hospitals.

The dietitian is the person who most effectively conducts nutrition projects in her own institution. She is concerned both with the patient's immediate needs and guidance for him in maintaining good nutrition upon discharge. Without imposing additional burdens and thereby becoming an "extra," nutrition education as described might be incorporated in the dietitians' daily activities.

A nutrition consultant from the State Department of Health may be available to assist in similar education programs. She may initiate a demonstration project, which the dietitian can continue, or, in a hospital without a staff dietitian, the consultant may present to the Director a plan which she herself is prepared to do.

BRINGING THE CLASSROOM AND THE SCHOOL LUNCHROOM TOGETHER

By Nina Cotton Willson, Upper Grade Supervisor
Madison Elementary School No. 1, Phoenix, Arizona

While doing my turn at lunchroom duty a few years ago as a teacher in one of our schools I despaired at the difference between the children's behavior and attitudes in the school lunchroom and in their classes. Lack of discipline, lack of appreciation for the food served, and excessive noise were common problems competing with the real purpose of the school lunch program. From these observations, shared by other teachers, came the beginning of the school's nutrition and good manners program.

In the Madison School District we now have developed activities that have successfully changed the previous "feeding" situation into a learning situation. Since its initiation eight years ago this nutrition and good manners program has found a place in nearly every phase of the school curriculum.

To carry out such a program a school needs two factors. The first is an administrator who is completely in favor of the school lunch program. He must feel that a teaching program related to the school lunch will contribute to the enrichment of the school's curriculum and provide educational material for every classroom and every student.

The second requirement is that the administrator find a person who is equally convinced of the importance of the program and who is willing to make the necessary plans and give the time to carry them out. With these two individuals ready to insure the success of the program, the support of the lunchroom manager, her staff, and all

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—that American teen-agers would drink 12½ billion pounds of milk a year, about 10 per cent of the present annual production, if they consumed the amount of milk recommended to provide them with the nutrients they need?

—that our population is growing younger faster than it is growing older, as the number of people over 65 increased 37 per cent in the decade between 1943 and 1953, while the number under 5 years increased 55 per cent?

—that the greener a vegetable is, the richer it is in vitamins and minerals, and that dark green leaves may carry several times as much of some nutrients as green stalks, fleshy pods or immature seeds?

—that people in the United States ate more cheese, 7.7 pounds per capita, last year than in any year since 1935?

—that Yak milk is drunk by the children in Tibet and also churned into butter which adults mix with barley meal or add to their tea?

—that the first food law in England was the Assize of Bread of 1203, dealing with false weights, and that offenders were driven through the streets with loaves of bread tied around their necks?

THINGS YOU'LL LIKE TO READ

Feeding Your Baby and Child—Benjamin Spock, M.D. and Miriam E. Lowenberg, Ph.D. Little, Brown & Co., Duell, Sloan & Pearce, New York. 1955. $3.75.

As you read this book, you feel as if you were talking with the authors. It combines Dr. Spock's common sense approach to infant care and Dr. Lowenberg's rich experience in feeding preschool children: sound information on diet for pregnancy, preparation of formulas, weaning, handling feeding problems, and child-approved recipes.

Your Health Today—W. W. Bauer, M.D. Harper & Bros., New York. 1955. $5.00.

This book appeals to the intelligent reasoning of young people and does not set up rigid health rules for them to memorize and later forget. It includes chapters on healthful living, food and digestion, and safety. At the end of each chapter, under the subhead, "The Ignorance Curtain," is a list of fallacies that are popularly believed about the different phases of health discussed in the respective chapters.

BRINGING THE CLASSROOM AND LUNCHROOM TOGETHER

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teachers should follow in response to the awakened school interest.

A first important step is to secure the cooperation and interest of the teachers. In our schools, we begin with a meeting of the teachers of grades four through eight during Orientation week preceding the opening of school. The teachers are given a brief and interesting explanation of the National School Lunch Program and the nutritional values of the Type A lunch, which must contain milk, protein main dish, fruit or vegetable, bread, and butter. The point is made that serving a Type A lunch and eating a Type A lunch are not necessarily the same things. An important purpose of the nutrition program is to motivate the child to eat a well-balanced lunch with an appreciation as to why he does so.

During the first two weeks of the school year, teachers in all grades feature a nutrition unit in health classes, finding varied approaches. Some aspects of the study are developed through menu making projects, studies of the foods of foreign countries, how foods are produced, transported, and processed. Some classes lengthen this unit into six weeks of nutrition and foods studies. Often the study is integrated through the year's program relating to social studies, arithmetic, art, language, and music.

In art classes, the children make "food and manners" posters and design bulletin boards; in spelling, they learn to spell the names of foods and related terms; in English, they make reports on foods, diet, and eating elsewhere. The auditorium classes use their studies on these themes to develop skits and quiz programs.

An exciting highlight for the eighth graders is their invitation each year to be luncheon guests of our exclusive Phoenix hotels and restaurants. Before the luncheon, these young teen-agers study menus, decide how to order a well-chosen meal, and get acquainted with any strange words that may appear on the menu. The boys learn the courtesies and good manners to use when taking a girl to lunch. Girls learn to receive the courtesies graciously.

Paralleling the nutrition program is a good manners program which has done much to create a quiet, happy atmosphere in the school lunch room, as the children have learned the joy of consideration for others. The manners activity has also served to increase the students' interest in the school lunch as the study of manners is centered in the lunchroom.

Since we have made the school lunch an integral part of the total school program, participation in the Type A lunch has increased and now averages about 90 per cent. Some classes have 100 per cent participation in the Type A lunch.

We have found that making the school lunch a part of the curriculum brings the teachers and lunchroom together in a program that enriches both.